

New Workers' Compensation Legislation: Expected Pharmaceutical Cost Savings

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Running Title: California's New Pharmacy Fee Schedule

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Abstract

Background California Workers' Compensation (WC) system costs are under review.

With recently approved California State Assembly Bill (AB) 749 and Senate Bill (SB) 228, an assessment of proposed pharmaceutical cost savings is needed.

Methods A large workers' compensation database provided by the California Workers' Compensation Institute (CWCI) and Medi-Cal pharmacy costs obtained from the State Drug Utilization Project are utilized to compare frequency, costs and savings to Workers' Compensation in 2002 with the new pharmacy legislation.

Results Compared to the former California Workers' Compensation fee schedule, the newly implemented 100% Medi-Cal fee schedule will result in savings of 29.5% with a potential total pharmacy cost savings of \$125 million. Further statistical analysis demonstrated that a large variability in savings across drugs could not be controlled with this drug pricing system.

Conclusions Despite the large savings in pharmaceuticals, inconsistencies between the two pharmaceutical payment systems could lead to negative incentives and uncertainty for long-term savings. Proposed alternative pricing systems could be considered. However pain management implemented along with other cost containment strategies could more effectively reduce overall drug spending in the workers' compensation system.

Key Words

Workers' Compensation, California, Pharmacy, Fee Schedule, Medicaid (Medi-Cal), Costs, Pain Medication, Drugs

Introduction

California is the largest workers' compensation (WC) system in the U.S. covering 14.7 million workers and ~20% of the U.S. market [Blay et al., 2000]. [Williams et al., 2003] The Workers' Compensation Insurance Rating Bureau (WCIRB), which transacts all workers' compensation insurance in California estimates that benefit costs rose from \$9.5 billion in 1995 to \$25 billion in 2002. [WCIRB, 2003]. Rising costs in the California Workers' Compensation system may have been due to deregulation of the insurance market, and a lack of legislative reforms to control costs and monitor benefits [Miller, 2002]. To resolve some of the complexities of the system, the Margolin-Bill Greene Workers' Compensation Reform Act of 1989 was passed followed in 1995 by Senate Bill (SB) 30 which deregulated workers' compensation rates. An internal government study suggested that SB 30 deregulation was associated with many insurers charging premiums that were 7-15% below cost to employers resulting in the liquidation of at least twenty-five workers' compensation insurance carriers, and placing the cost burden on the State Compensation Insurance Fund (State Fund or SCIF) [California Department of Insurance, 2003; Institute of Governmental Studies, 2004]. State Fund currently handles over 50% of the California Workers' Compensation market and writes 54% of all new policies [California Department of Insurance, 2003]. Although there were system wide decreases in claim volume, these savings were somewhat offset by the rising number of permanent disability cases and increasing medical costs, including pharmacy expenses, all contributing to system wide increases in premium costs [Neumark, 2005].

Pharmacy expenses alone in California Workers' Compensation have risen 243%, from \$86.4 million in 1997 to \$296.6 million in 2002 compared to only a 127% rise in

national drug spending [Braden et al., 1998; Smith et al., 2005; WCIRB, 2003]. One reason for the high pharmacy costs according to an internal government study might be the California Workers' Compensation pharmacy fee schedule that was one of the most generous workers' compensation fee schedules in the United States [Neuhauser et al., 2000].

Legislative Pharmacy Reforms

In February, 2002 and July, 2003 Assembly Bill (AB) 749 and Senate Bill (SB) 228 were passed in California to help contain some of the rising costs in the California Workers' Compensation system [Calderon, 2002; Alarcón, 2003]. State Assembly Bill (AB) 749 required that the Administrative Director of the Division of Workers' Compensation adopt a pharmacy fee schedule by July 1, 2003 that required generic substitution when available, and, a single dispensing fee for brand and generic medications, without limiting access to pharmacy services [Calderon, 2002]. In July 2003 California Senate Bill (SB) 228 required the Official Pharmaceutical Fee Schedule to be based on a 100% of the Medi-Cal fee schedule rather than the former formulae [Alarcón, 2003]. In order to implement AB 228 the Division of Workers' Compensation posted a Medi-Cal calculator on the Division of Workers' Compensation website triggered by each medication's National Drug Code.

(www.dir.ca.gov/dwc/pharmfeesched/pfs.asp).

Objective

We determined the economic impact of the legislative reforms on pharmaceuticals by recalculating the payment for selected medications under the Medi-Cal 2002 allowances. More specifically we substituted Medi-Cal amounts paid in 2002, for the

total workers' compensation drug amounts paid in 2002 (prior to the legislation) for selected medications. In this way we modeled expected savings.

Materials and Methods

Pharmaceutical Fee Schedule Equations

The former pharmaceutical fee schedule was a two-part equation comprising a medication fee based on the Average Wholesale Price (AWP), which is a price set by the manufacturer for pharmaceutical products, and a dispensing fee. The AWP is provided by pharmaceutical manufacturers and published by multiple sources including First Data Bank and Red Book [First DataBank, 2004; Cohen, 2002]. Most state workers' compensation systems pay in the range of 90% of AWP with the exception of Washington State (77% of AWP) and Hawaii and Idaho (102% of AWP) [Neuhauser et al., 2000]. The dispensing fee, usually a percentage of AWP or a set rate per prescription, is provided as compensation to the pharmacy for administrative costs related to repackaging and claims processing, and the dispensing fee is generally higher for workers' compensation prescriptions than other health plans. Listed below are the equations used to calculate payment of pharmaceuticals for both the previous system and the newly legislated system.

The California Fee Schedule (pre-2004):

- 1) Generic drugs: $(\text{AWP} \times 1.4) + \7.50 (Dispensing Fee)
- 2) Brand name drugs: $(\text{AWP} \times 1.1) + \4.00 (Dispensing Fee)

The Medi-Cal fee schedule provides reimbursement at the lower of several calculations.

For example, the lower of:

- 1) Maximum Allowable Ingredient Cost (MAIC; usually calculated as a multiple of the lowest published price) + \$4.05 (Dispensing Fee) – \$0.50 or

- 2) Federal Upper Limit (FUL; a negotiated value used only for generics with high utilization) + \$4.05 (Dispensing Fee) - \$0.50 or
- 3) Estimated Acquisition Cost (EAC; usually equal to $AWP * 0.90$) + \$4.05 (Dispensing Fee) - \$0.50 (As of September 1, 2004; $EAC = AWP * 0.83$)
- 4) Usual and Customary Charges

Because each drug's Medi-Cal cost can be recalculated monthly and is based partly on the availability of rates from contract negotiations, the rates are calculated with a computer program and we also used the published paid rates by NDC rather than calculating our own rates.

Study Sample

We used a sample of workers' compensation prescription claims collected from the California Workers' Compensation Institute (CWCI), a private, nonprofit organization of workers' compensation insurers who collect claims data from their members. For this study we selected only pain and pain related medications, which comprise 38.9% of total CWCI member prescriptions and 52.5% of the total CWCI workers' compensation pharmacy payments. Selected pain and pain related medications were categorized into the standard therapeutic classes for cost analysis (Figure I) [Katzung, 2001].

Each drug is also categorized by National Drug Code (NDC), an 11-digit code established by the Food and Drug Administration (FDA) that identifies a specific medication by strength, quantity provided, generic or brand, as well as the origin of the medication (manufacturer or repackager). The CWCI data also include the billed amount, paid amount, drug NDC and name dispensed.

To compare these costs to an alternative pricing system, Medi-Cal costs during 2002 were obtained from the State Drug Utilization Project [Center for Medicare & Medicaid Services, 2003]. The Medi-Cal NDCs are broken down quarterly by total number of prescriptions, total number of units sold (pills dispensed) and total costs paid. To ensure consistent data, the 4th quarter payment was used for each NDC provided or for the previous quarter if the 4th quarter data was not available.

Cost Analysis

All NDCs listed in the Red Book from the selected medication list (Figure 1) that were available were extracted from the CWCI data set. Medi-Cal's AWP source is First Data Bank, but this was not available to us and the Red Book AWP is comparable. This resulted in 1,315 workers' compensation NDCs and their total costs, which provided the sample for comparison with the Medi-Cal system. We used the amount paid, the total number of prescriptions and the assumption that payments were based on the 2002 pharmaceutical fee schedule to create a formula to calculate the average pills per prescription. We then calculated average annual cost per pill and per prescription as well as total annual costs paid by NDC in 2002. After that we repriced the 2002 workers' compensation pharmacy costs for each NDC using Medi-Cal prices paid in 2002 per pill for the same NDC to determine any potential changes in costs.

We then calculated the differences in total annual workers' compensation cost between the old and new pharmacy fee schedules by NDC, by drug name, by therapeutic class, for all brand or, all generics, and for all the selected drugs together. We did not identify substitutions from brand to generic in the old and new pricing systems, because we were unable to determine the extent of this substitution from the data. In addition, we calculated the total expected savings to the whole system by projecting to the total

workers' compensation market from that data represented by both our drug selection and our database. Finally we conducted a linear regression analysis to determine which factors best predict savings from the old to the new pricing systems.

Results

Non-Comparability of Pricing Systems

Our major early finding was that there was no comparable NDC price provided under the Medi-Cal system for 60% of our selected California Workers' Compensation NDCs. The Division of Workers' Compensation also note this payment problem. Since, the old pharmaceutical fee schedule formulae provided the maximum reasonable allowance for NDCs with no equivalent Medi-Cal price we realized that there were no reform savings for at least 60% of the NDCs. Therefore, in the first substitution, we used the former fee schedule formulae for any NDC that lacked Medi-Cal prices (Medi-Cal + Old CA WC)¹. Anticipating that alternative substitution methods might be recommended in the future to increase savings, we also used one additional substitution method for the non-Medi-Cal priced NDCs. The second method substituted an alternative price of AWP-10% for NDCs with no Medi-Cal price, because this is the formulae most frequently used by other state's workers' compensation systems for pharmacy reimbursements (Medi-Cal + AWP-10%). In addition we re-priced at AWP-10% for all the NDCs instead of using the Medi-Cal fee schedule to see how a more transparent method of reimbursement would compare with the newly implemented legislation (AWP-10%).

Expected Savings

¹ Note: Effective September 1, 2004 Medi-Cal reimbursement will be Average Wholesale Price * 0.83 (dispensing fee not included)

Based on 2002 workers' compensation utilization and costs, and substituting for each NDC Medi-Cal costs when available, or with the old fee schedule allowances when Medi-Cal prices were unavailable, savings from our sample were \$11,495,098 for pain and pain related drugs alone, a 29.5% cost reduction. The number of pain related prescriptions in our sample was 461,425 out of 1,186,621 total California Workers' Compensation pharmacy prescriptions claims in our CWCI sample. The total billed amount for all drugs and supplies was \$94,482,689 and the total paid was \$74,199,281. Using CWCI pain data that represents 13.7% of all workers' compensation pharmacy payments in California, we inflated our total CWCI pain medication costs by 86.3% in order to estimate total workers' compensation costs for all those insured. Since the CWCI data excludes self-insured employers, we used the WCIRB estimate for 2002 that the self-insured comprise 30% of the total workers' compensation costs and multiplied our CWCI inflated total costs by their suggested factor of 1.49 [Baker et al., 2002; CHSWC, 2003]. In this way we estimated our savings calculated from the WCIRB (\$423.9 million) total 2002 California workers' compensation payment to pharmacies of [CHSWC, 2003]. Assuming that the 29.5% cost savings we found for pain and pain related drugs extends to all drugs, then one could expect a savings of \$125 million to the whole workers' compensation system in 2002.

Savings with Alternative Substitution Method and Pricing System

Because of the non-comparability between Medi-Cal and Workers' Compensation NDCs, we also calculated cost savings using an alternative substitution method. First, for those NDC drugs with no Medi-Cal price we substituted a price of AWP-10% and found that the pain and pain related drugs of the new system compared with the old system saved 33.8%, \$21 million more in savings than the current substitution method being

used (Table I). If one paid for drugs using a different pricing system such as a straight calculation of AWP- 10% then savings were 29.20% or \$124 million to the total workers' compensation system. This is almost the same as the expected savings using the current system (\$1 million less saved) but would be a much easier system to use. However, in the long term, there may be much less control by legislators over the AWP than over the Medi-Cal pricing, so this similarity in savings might not be sustained over the years.

Savings by Therapeutic Class

By therapeutic class, savings ranged from 21-47% using the current new pricing system with anxiolytics/sleep aids accounting for the largest percentage of savings and skeletal muscle relaxants/anticonvulsants the least. These savings differed by pricing system as can be seen in Table I. Comparing the current and AWP-10% substitution systems, larger percentages of savings are found mainly with the skeletal muscle relaxants/anticonvulsants (9% greater savings) and the NSAIDS (6% greater savings). The other drug classes showed similar savings percentages. The AWP-10% pricing system compared with the current new Medi-Cal system show very different savings percentages by therapeutic class. For example the AWP-10% system has a 14% lower savings for anxiolytics/sleep aids, an 8% lower savings for narcotics/analgesics (C-III or greater) while other drug classes primarily had slightly higher percentages of savings. Therefore actual savings with different pricing mechanisms will depend on particular drug characteristics.

Savings by Drug

We found substantial variation in cost savings depending on the characteristics of the drug itself. Therefore we calculated expected percent savings for each NDC by drug (Table II). For example, the greatest savings was for alprazolam (79%), which had

complete Medi-Cal substitution and low FUL prices. The second highest savings (42%) was from sertraline, available at that time as a brand only drug. Savings from five other drugs ranged from 38-39% and included tizanidine, venlafaxine and fluoxetine, zolpidem and lansoprazole.

Nabumetone produced the least cost reductions by drug of any of the pain and pain related medications with savings of 4% (Table II). It also rarely had an NDC that was substitutable with a Medi-Cal price. Propoxyphene, available as generic, but with no FUL price produced the second lowest cost reductions with savings of 4.5%. Also providing low cost savings are naproxen (20%) and carisoprodol (15%), both with a FUL Medi-Cal price and greater than 95% generic use by number of prescriptions. However, neither of the drugs that produced the highest nor lowest expected savings by drug had the highest volume of use within that drug group so they didn't affect the overall savings greatly.

Costs and Savings by Prescription

For pain and pain related prescriptions overall the average payment per prescription was \$85.31 (S.D.= \$194.94) using the old pharmacy fee schedule prices, and \$65.54 (S.D.= \$146.44) for the current Medi-Cal + WC fee schedule prices. Average payment was a similar \$62.50 (S.D.= \$107.79) if using straight AWP-10% instead and a much lower \$55.95 (S.D.= \$139.51) when using the Medi-Cal system and AWP-10% substitution system. Our average payment per prescription with the new legislation and our alternative methods save about \$20 per prescription.

Pain and Pain Related Drug Costs

Pain and pain related drugs made up the majority of costs for a total of \$39 million dollars paid in our sample (Table II). NSAIDS account for the most costs (\$9.6

million or 18.5%) but only 12% of the prescriptions, while CIII or greater narcotics account for the largest number of prescriptions (14%) and only 10% of the costs. The high costs of both brand and generic oxycodone and fentanyl account for much of the difference between costs and prescriptions found in the C-II Narcotics, while the low costs of brand and generic hydrocodone account for the larger number of prescriptions compared with costs in the C-III Narcotics. Celebrex and Vioxx, available at that time as brand only, accounted for the highest total costs of the NSAIDS (\$3.4 million and \$3.0 million respectively), but with Vioxx withdrawn from the market in October 2004, the cost dynamics will likely change as there is more use of other NSAIDs.

FUL Related Savings

Medi-Cal specified, and very low FUL prices for certain generic drugs, which have especially high utilization could lead to large reductions when applied to the workers' compensation drugs. However, we found that there are only 4 drugs that have FUL prices in our pain and pain related drug sample and we already demonstrated that FUL prices are seen in drugs with both large and small cost savings. Since an FUL is given to all the NDCs of a generic drug but only those NDCs used by Medi-Cal are posted and substituted with the new pricing system, we look at the effects of FUL pricing while controlling for non-substitutability. The savings for cyclobenzaprine, naproxen, and alprazolam all with FUL prices were large (82-89%) and the other drug, carisoprodol, had lower savings (44%). In addition, these four drugs account for a total of \$8.8 million in the old payment system out of \$27.5 million total current estimated pain drug payments (32%), with only a 20% overall savings when accounting for both substitutable and non-substitutable NDCs. Therefore Medi-Cal FUL prices do provide large savings

but some of these drugs lack an equivalent Medi-Cal NDC price, so they do not have a large effect on overall savings to the workers' compensation medication payments.

Costs and Savings of Brand and Generic Drugs

We compared costs and savings separately for brand and generic drugs overall to see if they had different effects. The savings for brand name medications were greater (33-36%) than generic medications (16-32%) depending on the substitution method used (Figure II). A straight AWP-10% system used to price workers' compensation drugs results in the highest savings (36%) for branded drugs, but the lowest savings (16%) for generic drugs. The alternate substitution system (Medi-Cal + AWP-10%) provides the highest savings for generic drugs (32%). Therefore it appears that the Medi-Cal system is responsible for much of the generic savings.

Eleven of the twenty-three medications studied have generic alternatives. However, brand only drugs represent 36% of the total pain prescriptions and 43% of the pain and pain related pharmacy payments. All brand drug use together represents the majority of the total pain payments at 65%, and only 45% of the total pain prescriptions for our study sample.

Statistical Analysis

In summary, we found that there isn't a consistent pattern of variation in savings that can be found when looking at each drug factor alone, with more complex patterns likely predictive of cost savings when using the new Medi-Cal pricing system. To check this we conducted a linear regression analysis to determine the main predictor of cost savings by NDC. Since savings were not normally distributed we also examined the log of savings, which were normally distributed. Seven dummy variables including FUL price, brand only, substitutability, repackager, and whether the drug was on the market

for less than 7 years, 7-15 years, or more than 15 years were used. Removing zeros for non-substitutable NDCs we significantly ($p < 0.0001$) predicted 8% of log savings with brand only, FUL price and greater than 15 years on the market showing increased cost savings (Adjusted-square=0.0829). When we included the zero savings due to non-substitutability, we predicted only 5% of the cost savings with brand only and substitutability significantly ($p < 0.0001$) predicting the savings (non-substitutability predicting lower savings, and branded drugs predictive of higher savings) (Adj. R-square = 0.0496).

Discussion

The new 100% Medi-Cal pharmaceutical payment schedule mandated by SB 228 cannot be used for at least 60% of the NDCs currently being used by the workers' compensation system. There are many specific drug choices depending on which manufacturer, package size, and dose are selected by the prescriber. This selection can be based on the needs of a particular patient, which suppliers the pharmacy gets the best price from, or other factors. However, as it exists now, for any drug for which a Medi-Cal NDC is not used and therefore has no price, the prior pharmacy fee schedule is used in our calculation and, limiting the savings from the new system.

All payment systems create incentives for maximizing payments. The current Medi-Cal + old WC system may encourage the selection of drugs which are not NDCs used by Medi-Cal so that pharmacies can be paid at higher reimbursement rates. When using the straight AWP-10% pricing system, however, since there is little control over the AWP, savings could diminish over time if manufacturers inflated AWP prices. For example, between 1998 and 1999, AWP prices increased by 12.8%, and when evaluated on a monthly basis, AWP unit price increased over 25% [Neuhauser et al., 2000].

However, the workers' compensation system could also respond by increasing the mandated reduction from AWP and keep prices both fair and better controlled. For example, if a straight AWP-10% system were used, the reductions off AWP could be tied to the Medi-Cal system and its percent reductions. In the rush to make policy changes, the full implications of the 100% Medi-Cal choice were not fully anticipated by the legislators.

Despite this difficulty with implementation, the savings to the pharmacy bill that can be expected (29.5%) are fairly high. This is especially important since studies demonstrate that pharmacy costs are rising annually [WCIRB, 2003]. However, given that pharmacy payments are 7% -9% of total Medical Expenditures in the 2002 California Workers' Compensation system and only 1.5% of the total workers' compensation costs overall, these changes save only 0.005% to the whole \$25 billion WC system in 2002 [CHSWC, 2003; WCIRB, 2004; Bellusci, 2002]. While pharmacy savings will have some effect on the ability to decrease premiums for California businesses, the contribution is expected to be no more than 0.1% [Wilson et al., 2005].

The cost per prescription (\$65) with the new pricing system is now comparable to that of other health plans. For example, others have reported an average cost per prescription of \$63 over all types of drugs and the California HealthCare Foundation in 2001 reported Medi-Cal costs per prescription averaged \$66.40. [Hays, 2004; California HealthCare Foundation 2002]. Another publication looking at group health pharmacy expenses, estimates that in 1999 the average retail cost per prescription in California was \$41.10, (\$47.58 in 2002 prices if inflated 5% per year) but for the newer prescriptions this estimate is higher, \$97.56 for Prozac 200 mg for depression, and \$91.91 for a prescription for Celebrex 200mg for chronic pain [Bymark et al., 2001]. The California

Workers' Compensation costs, however may not be comparable to other health plans average costs as their drug utility pattern differs from other groups. It is unclear how these price differences will affect demand for drugs in the workers' compensation system, but this should be examined in future studies.

We found that there are large variations in savings depending on certain drug characteristics such as brand vs. generic, availability of generics, availability of FUL prices, shared NDC with Medi-Cal and workers' compensation systems and others. Although high previous use of branded drugs usually accounts for the greatest percentage savings, no single factor accounts for all the variation, indicating that the pattern is more complex, involving a combination of these factors.

Another interesting source of variability in savings was from the frequent use of repackager NDCs in workers' compensation. This was most notable when determining which pain related NDCs weren't comparable between the California Workers' Compensation and Medi-Cal system. Repackagers are rarely or never covered under the Medi-Cal system, but used by workers' compensation prescribers. However, the proportion of each drugs costs attributed to repackagers in this study is minimal, ranging from 0.01% to 20%, since most repackaged drug prescriptions are for small quantities. Exceptions include generic cyclobenzaprine (67.51%), generic nabumetone (69.78%), generic carisoprodol (70.35%), generic naproxen (76.66%), generic propoxyphene (98.09%), and gabapentin, a brand only medication (100%). Therefore, although most repackaged drugs have no Medi-Cal price and are therefore priced by the old workers' compensation fee schedule, it is difficult to tell from these data alone whether the practice will save costs by reducing waste, or "games the system" by requiring high prices. Some of this frequent use of repackagers may result from pharmacies limiting their liability for

longer prescriptions that have not yet been authorized by the workers' compensation system for payment. Repackaging practices warrant further examination to determine their effects on the system.

Attention should always be paid to maintaining patient access to needed medications and pharmacies when making policy changes which affect drug costs as is required in the AB 749 legislation. An earlier internal study conducted by the CHSWC concluded that access to pharmacies servicing workers' compensation patients would not be largely affected [Neuhauser et al., 2000]. Access to medications themselves might not be affected because the current pharmacy legislation substitutes the former California pharmacy fee schedule for any non-equivalent NDCs thus allowing workers' compensation patients the freedom of a non-formulary based prescription benefit. However if lower payments cause small pharmacies to close, pharmacy access may decrease.

Our study has several limitations that should be noted. A full estimate of pharmacy savings due to all parts of SB228 was not made in this study due to the limitations of our sample. First, we used CWCI data, which is a sample of drug use in workers' compensation, not all drug use. However, we think these drugs and these data are representative of the whole system and what we can expect. Secondly, we selected only pain and pain related drugs, which are the majority of workers' compensation drugs and are representative of the types of drugs that are used by injured workers. However other drugs may have different patterns of utilization and cost savings.

Another limitation is that we used 2002 drug data (the most recent data available at the time). Some of the drugs that were only available as brands in 2002 now have generics available so savings could differ in future years. Eleven of the twenty-three pain

related drugs were only sold as brand name products in 2002 with four new medications (tramadol and omeprazole in 2002, tizanidine and paroxetine in 2003) approved for generic use since that time [US Food and Drug Administration, 2004]. In addition, as of September 1, 2004, Medi-Cal pharmacy costs were further reduced to a rate of $AWP \times 0.83$ instead of $AWP \times 0.90$ so actual savings now may be greater than predicted. We recommend a follow-up study using actual data since the legislation has been implemented, to determine the full savings more accurately.

Finally, savings due to generic substitution were not considered in this study since we confined our analysis to examining only the savings due to the change in payment method. The CHSWC proposed that if generic substitution could increase from 83% in 2000 to 93%, as expected, pharmaceutical costs could be reduced an additional 2.5%, a savings of \$10.5 million [Neuhauser et al., 2000].

In conclusion, we demonstrate significant pharmaceutical savings with the new 100% Medi-Cal payment method (\$125 million). We also examined an alternative substitution method based on a combination of Medi-Cal and $AWP - 10\%$, which would provide an additional 4.3% savings (or a total of \$146 million savings) compared to the pharmacy fee scheduled currently adopted by California workers' compensation system. Also a more transparent fee schedule based on $AWP - 10\%$ only provides essentially the same savings as the existing system for consideration (with only \$1 million less saved). The study suggests that the current payment method provides an avenue for selection of drugs by NDC not used by Medi-Cal to maximize payments. This practice could reduce future savings to the system and requires further monitoring. We also demonstrate the variability of savings depending on multiple characteristics of the drug and its market characteristics, demonstrating the complexity of controlling drug spending using only

drug pricing systems. This legislation is a good start towards controlling pharmacy costs. However, more pharmacy cost reductions can probably be obtained by making changes in patterns of prescribing of pain and other medications than by changing drug pricing alone [Wilson Leslie 2004]. This can be accomplished either by offering pain guidelines, or using consulting pharmacists or others who specialize in pain treatment to guide complex pain cases [Dworkin et al., 2003; Harden et al., 2003; Bannwarth, 1999; Cole, 2004].

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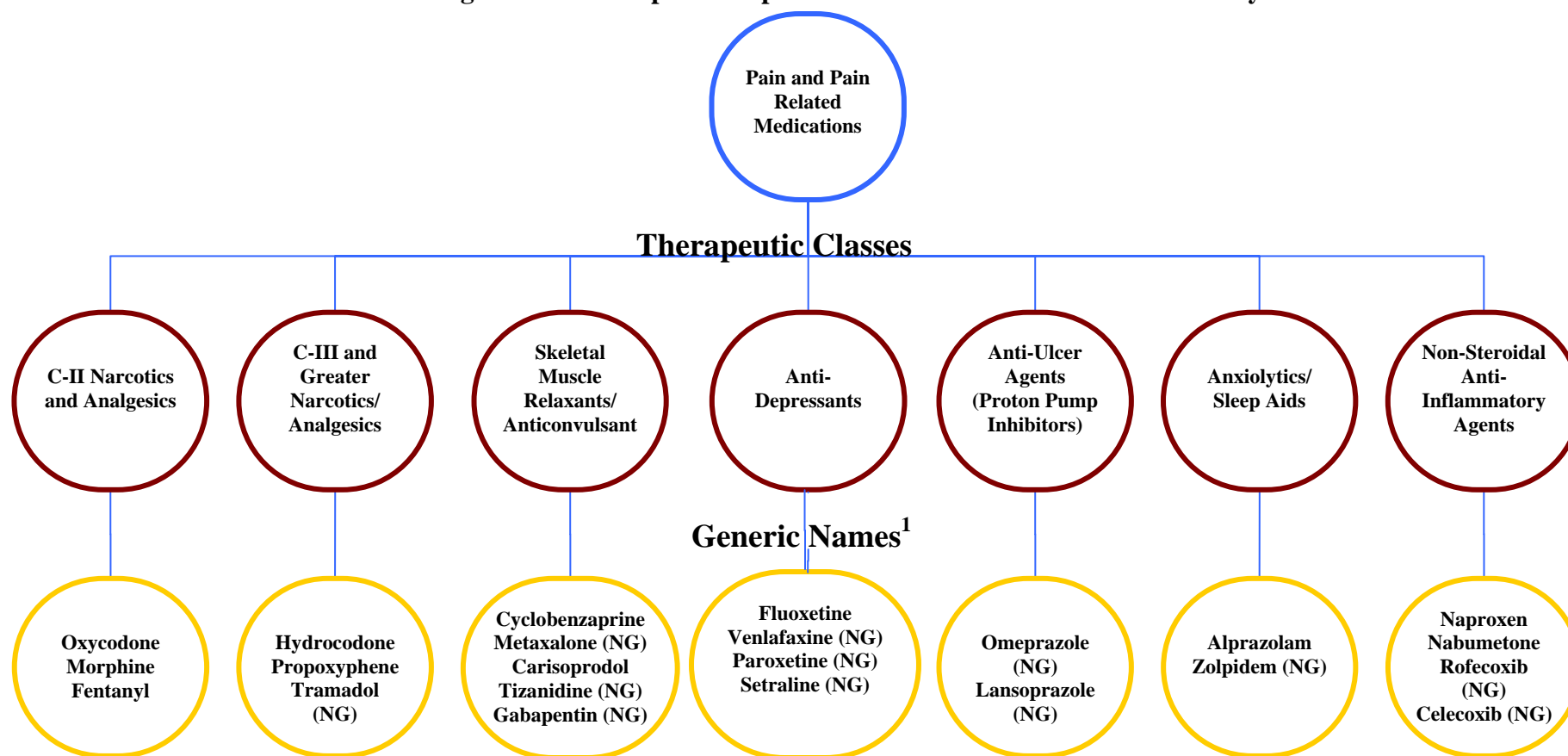
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Figure I: Selected pain and pain-related medications included in analysis.



¹ Brand Names: oxycodone includes Oxycontin, Percocet, Percodan, Endodan, Endocet, Roxicet; morphine includes MS Contin, MSIR, Roxanol; Fentanyl includes Duragesic, Actiq, Sublimaze; propoxyphene includes Darvocet, Darvon; tramadol includes Ultram; hydrocodone includes Vicodin, Vicoprofen, Lortab, Lorcet, Norco, Hydrocet, Anexia; cyclobenzaprine includes Flexeril; metaxalone includes Skelaxin; tizanidine includes Zanaflex; carisoprodol includes SOMA; gabapentin includes Neurontin; venlafaxine includes Effexor; paroxetine includes Paxil; sertraline includes Zoloft; fluoxetine includes Prozac; omeprazole includes Prilosec; lansoprazole includes Prevacid; alprazolam includes Xanax; zolpidem includes Ambien; naproxen includes Naprosyn; celecoxib includes Celebrex; rofecoxib includes Vioxx; nabumetone includes Relafen

²NG= no generic available

Table I: Total Estimated Costs and Percent Savings by Therapeutic Class Using Substitution and Alternative Payment Methods

	Workers' Compensation Pharmacy Fee Schedule Costs From Former California Law	Workers' Compensation Pharmacy Fee Schedule Costs From New California Law - (Medi-Cal and Former California Fee Schedule)	Workers' Compensation Pharmacy Fee Schedule Costs Alternative Method- (Medi-Cal and Average Wholesale Price – 10%)	Workers' Compensation Pharmacy Fee Schedule Costs Alternative Method- (Average Wholesale Price – 10% Only)
Total for Overall California WC System	\$423,869,000	\$299,013,656	\$280,429,898	\$300,059,941
% Change From former CA WC		29.50%	33.83%	29.20%
Total for All Pain-Related Medications	\$38,968,232	\$27,473,130	\$25,784,494	\$27,589,404
% Change From former CA WC		29.50%	33.83%	29.20%
Narcotics and Analgesics (C-II)				
Total Costs	\$6,891,236	\$4,778,217	\$4,770,463	\$4,582,506
% Change From former CA WC		30.66%	30.77%	33.43%
Narcotics and Analgesics (C-III or greater)				
Total Costs	\$7,395,349	\$5,080,332	\$4,830,935	\$5,688,611
% Change From former CA WC		31.30%	34.68%	23.08%
Skeletal Muscle Relaxants/ Anticonvulsants				
Total Costs	\$6,171,138	\$4,883,156	\$4,300,099	\$4,810,783
% Change From former CA WC		20.87%	30.32%	23.56%
Antidepressants				
Total Costs	\$2,604,444	\$1,612,589	\$1,605,391	\$1,676,306
% Change From former CA WC		38.08%	38.36%	35.64%
Anti-Ulcer Agents				
Total Costs	\$1,062,575	\$695,205	\$695,126	\$678,711
% Change From former CA WC		34.57%	34.58%	36.13%
Anxiolytics/Sleep Aids				
Total Costs	\$1,518,558	\$803,756	\$795,748	\$1,021,591
% Change From former CA WC		47.07%	47.60%	32.73%
Non Steroidal Anti-inflammatory Drugs				
Total Costs	\$13,324,930	\$9,619,876	\$8,786,732	\$9,130,896
% Change From former CA WC		27.81%	34.06%	28.79%

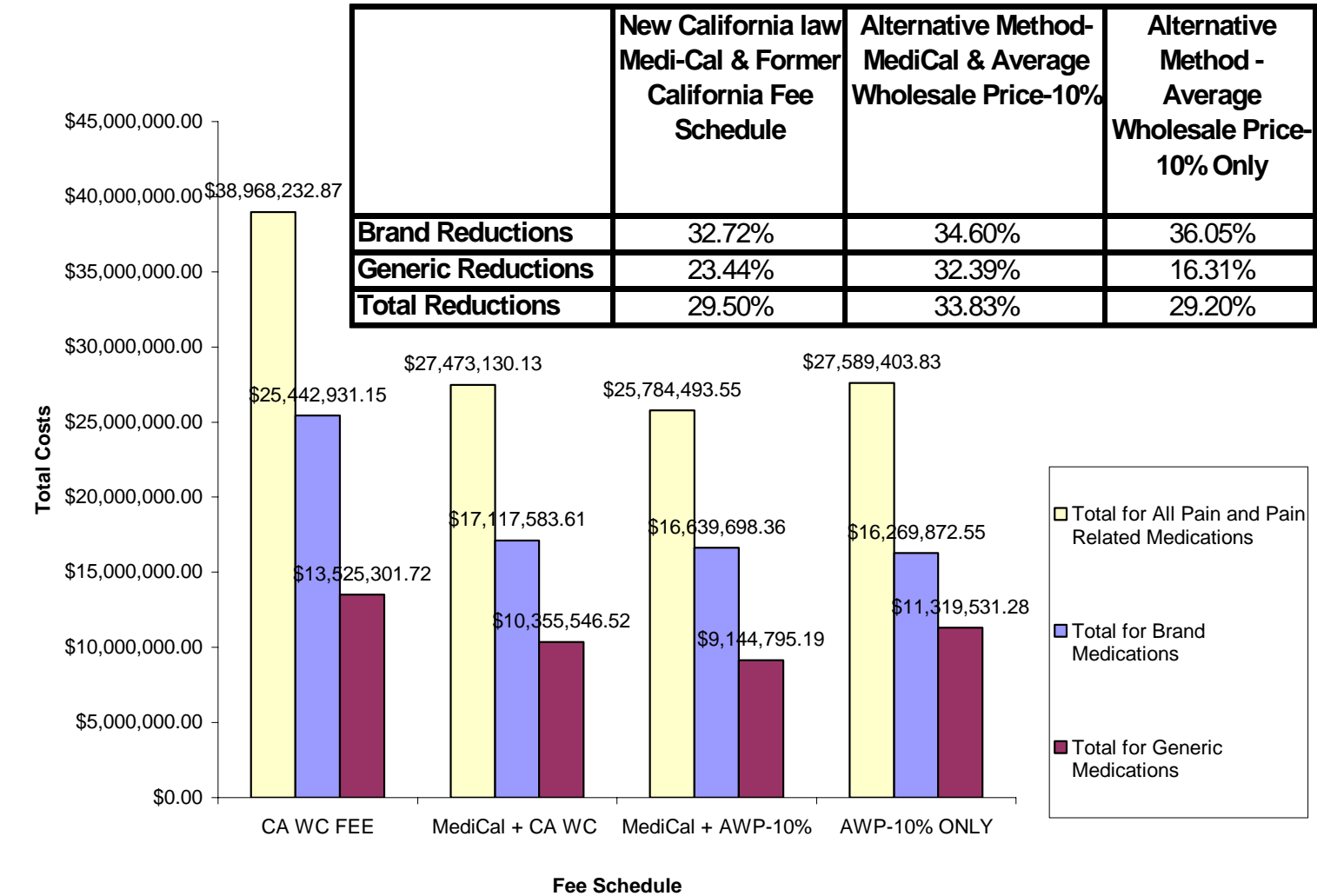
Table II: Prescription and cost utilization of pain & pain related medications¹ in the California WC² system. Percentages based on total CWCI³ pharmacy claims including prescription and costs, 2002.

	Total CWCI Prescriptions	Total CWCI Pharmacy Costs (\$)	Total CWCI Pharmacy Costs (\$)	Expected Savings (\$)
	(% Of Total CWCI Prescriptions)	From Former California Law (% Of Total CWCI Pharmacy Costs)	From New California Law (Medi-Cal and Former California Fee Schedule)	New versus Former California Pharmacy Fee Schedules (% Reduction)
Total for CWCI Pain & Pain Related Medications	461,425(38.89)	38,968,232(52.52)	27,473,134	11,495,098(29.50)
C-II Narcotics and Analgesics				
Oxycodone	11,924(1.00)	4,436,543(5.98)	3,015,457	1,421,086(32.03)
Morphine	2,604(0.22)	891,981(1.20)	647,453	244,527(27.41)
Fentanyl	2,883(0.24)	1,562,711(2.11)	1,115,308	447,404(28.63)
Totals	17,411(1.47)	6,891,236(9.29)	4,778,218	2,113,018(30.66)
C-III or Greater Narcotics and Analgesics				
Hydrocodone	127,715(10.76)	4,805,128(5.98)	3,083,817	1,721,311(35.82)
Tramadol	25,628(2.16)	1,902,544(2.56)	1,339,985	562,559(29.57)
Propoxyphene	17,887(1.51)	687,676(0.93)	656,531	31,144(4.53)
Totals	171,230(14.43)	7,395,349(9.97)	5,080,333	2,315,016(31.30)
Skeletal Muscle Relaxants/Anticonvulsants				
Cyclobenzaprine	20,295(1.71)	811,576(1.09)	569,181	242,395(29.87)
Metaxalone	6,955(0.59)	401,712(0.54)	293,271	108,440(26.99)
Tizanidine	7,477(0.63)	724,218(0.98)	445,201	279,018(38.53)
Carisoprodol	48,751(4.51)	4,210,217(5.67)	3,552,091	658,125(15.63)
Gabapentin	2,63(0.02)	23,413(0.03)	23,414	0(0)
Totals	83,741(7.06)	6,171,138(8.32)	4,883,157	1,287,980(20.87)
Antidepressants				
Venlafaxine	4,759(0.40)	696,862(0.94)	422,996	273,867(39.30)
Paroxetine	5,630(0.47)	678,698(0.91)	455,293	223,405(32.92)
Sertraline	4,859(0.41)	607,856(0.82)	352,136	255,719(42.07)
Fluoxetine	3,506(0.30)	621,027(0.84)	382,165	238,863(38.46)
Totals	18,754(1.58)	2,604,444(3.81)	1,612,589	991,855(38.08)
Anti-Ulcer Agents				
Omeprazole	3,462(0.29)	664,266(0.90)	446,635	217,631(32.76)
Lansoprazole	2,206(0.19)	398,308(0.54)	248,570	149,738(37.59)
Totals	5,668(0.48)	1,062,575(1.43)	695,205	367,370(34.57)
Anxiolytics/ Sleep Aids				
Alprazolam	6,093(0.51)	344,469(0.46)	73,464	271,005(78.67)
Zolpidem	14492(1.22)	1,174,089(1.58)	730,291	443,797(37.80)
Totals	20585(1.73)	1,518,558(2.05)	803,756	714,802(47.07)
NSAIDS				
Naproxen	50,121(4.22)	3,432,055(4.63)	2,755,275	676,780(19.72)
Celecoxib	43,789(3.69)	4,586,711(6.18)	2,984,120	1,602,591(34.94)
Rofecoxib	44,971(3.79)	4,870,022(6.56)	3,444,455	1,425,567(29.27)
Nabumetone	5,155(0.43)	454,495(0.61)	436,024	18,470(4.06)
Totals	144,036(12.14)	13,324,930(17.96)	9,619,876	3,705,054(27.81)

¹ Pain medications include a collection of brand name drugs and any acceptable generic equivalents.

² WC: Workers' Compensation ³ CWCI: California Workers' Compensation Institute

Figure II: Comparison of different alternative pharmaceutical fee schedules and potential costs savings between brand and generic pain & pain related medications during 2002.*



* Abbreviations are as follows:
 CA = California
 WC= Workers’ Compensation
 AWP= Average Wholesale Price